

USSR

UDC: 621.374.2

BRESLAVTSEV, I. D., et al, Pribory i Tekhnika Eksperimenta, No 4, ' July-August 1972, pp 26-31

involving the IAE cyclotron is described, together with the electronic equipment, and a sketch of the instrumentation is given in block form. A neutron pulse frequency of as much as 110 kHz is obtained. The authors are associated with the Institute of Atomic Energy at Moscow.

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USSR

VENIKOV, G. V. and GOLEMBO, B. Z.

"Some Problems of Selection of the Structure of Hardware and Software for Automatic Control Systems"

Tekhn. Kibernetika. T. 5 (Itogi Nauki i Tekhn. VINITI AN SSSR) [Engineering Cybernetics. Vol 5 (Results of Science and Technology, All-Union Institute for Scientific and Technical Information, Academy of Sciences USSR) -- Collection of Works], Moscow, 1973, pp 449-474 (Translated from Referativnyy Zhurnal Mekhanika, No 9, 1973, Abstract No 9V722).

Translation: The basic requirements are formulated for hardware for prospective automatic control systems; characteristics of the structure of an ACS hardware complex are presented; the structures of information storage and prospects for their development; problems of ACS software are discussed and some criteria for their optimal effectiveness are presented.

Authors' view

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1/2 032 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--DIFFUSIVE TRANSFER OF A SUBSTANCE AND "MEMORY" EFFECT DURING LAYER
BY LAYER MASS SPECTRAL ANALYSIS OF SOLIDS -U-
AUTHOR-(03)-CHUPAKHIN, M.S., VENITSIANOV, YE.V., RAMENDIK, G.I.
COUNTRY OF INFO--USSR
SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(4), 905-8
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY, PHYSICS
TOPIC TAGS--BORON, SILICON, MASS SPECTROMETER, MASS SPECTROSCOPY, METAL
DIFFUSION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1995/1135 STEP NO--UR/0020/70/190/004/0905/0908
CIRC ACCESSION NO--AT0116600
UNCLASSIFIED

2/2 032

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AT0116600

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DIFFUSION OF B IN SI WAS STUDIED TO DET. THE DEGREE OF ERROR WHICH IS INTRODUCED IN A MASS SPECTROSCOPIC ANAL. DUE TO A "MEMORY" EFFECT. THE STUDY REVEALS THAT APPARENTLY ALL THE PUBLISHED DATA FOR DETN. OF IMPURITIES IN SOLIDS HAVE AN ERROR DUE TO THIS EFFECT. FACILITY: INST. GEOKHIM. ANAL. KHIM. IM. VERNADSKOGO. MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 624.131+539.215

VASIL'YEV, I. M., GREBNEV, K. K. and VENKATACHALAM, G.

"Calculation of the Three-Dimensional Stability of Uniform Slopes of Earth Dams"

Moscow, vses. konf. Metody opredeleniya napryazh. sostoyaniya i ustoychivosti vysokonaporn. gidrotekhn. sooruzh. i ikh osnovaniy pri statich. i dinamich. nagruzkakh. Tezisy dokl. (All-Union Conference on Methods of Determining the Stress Condition and Stability of High-Pressure Hydraulic Engineering Structures and Their Foundations Under Static and Dynamic Loading. Thesis Report, Collection of Works), 1972, pp 313-322 (from Referativnyy Zhurnal -- Mekhanika, No 4, 1973, Abstract No 4V806 by G. A. Lipson)

Translation: A method of calculating the spatial stability of slopes according to the scheme of a nonolithic body of collapse is proposed, for which the safety factor is determined by the ratio

$$K = \frac{\tan \phi_D}{\tan \phi_K} = \frac{C_D}{C_K}$$

where ϕ_K , C_K are the critical stability characteristics at the moment of limit equilibrium; ϕ_D , C_D are the actual stability characteristics. The form of the surface slipping of the body of collapse can be described by the equation of the

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VASIL'YEV, I. M., et al., Vses. konf. Metody opredeleniya napryazh. sostoyaniya i ustoychivosti vysokonaporn. gidrotekhn. sooruzh. i ikh osnovaniy pri statich. i dinamich. nagruzkakh. Tezisy dokl. 1972, pp 313-322

curve $l=d(x/b)^n$ where d is the maximal depth of entrainment of the body of collapse; b is the maximal half width of the body of collapse; n is the index of calculation of the most dangerous form of the surface. A system for conducting calculations is demonstrated, allowing calculation of the additional load from the seismic force, filtration etc., which make the proposed method for ground slopes with uniform ratios C and ϕ more complete and economical.

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USSR

UDC: 621.375.82

VENKIN, G. V., DERYUGIN, L. N., PROTASOV, V. P., SOTIN, V. Ye.,
and CHEKHLOVA, T. K.

"Laser Using a Traveling Wave, Ring Waveguide Resonator"

Moscow, V sb. Kvant. elektronika (Quantum Electronics--collection
of works) "Sov. radio," No 1(13), 1973, pp 108-109 (from RZh--
Fizika, No 7, 1973, Abstract No 7D1007)

Translation: Oscillations are obtained from rhodamine 6Zh in a
traveling wave, ring resonator in the excitation of the second
harmonic in a neodymium laser. The ring resonator is a fine gela-
tin film on a glass rod. The concentration of the rhodamine in
the film is 10^{-3} - 10^{-2} moles/liter. Authors' abstract

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Acc. Nr: **APC038021** ✓

Ref. Code: UR 0056

PRIMARY SOURCE: Zhurnal Eksperimental'noy i Teoreticheskoy
Fiziki, 1970, Vol 58, Nr 1, pp 3-13

**ANOMALOUS BROADENING OF SPECTRAL LINES
IN NONLINEAR LIQUIDS AND ITS EFFECT ON STIMULATED
SCATTERING PROCESSES**

Bol'shov, M. A; Venkin, G. V.; Zhilkin, S. A.; Nurminskiy, I. I.

Results of an experimental investigation of the spectral structure of laser radiation passing through a self-focussing liquid are reported. For complete isolation of the generator from the scattering medium the second harmonic of a neodymium laser is employed as radiation source. The generator can operate under incoherent mode or mode-locked conditions. The spectral structure of the radiation was investigated in the direction of the incident light as well as at an angle of 180°. Broadening of a quasicontinuous nature and broadening involving a set of discrete lines, the distance between which was, as a rule, not related to the incident radiation spectrum, are recorded. An analysis of the experimental results shows that the spectral line broadening may be ascribed to interaction between space and time modulation of the beam during its self-focussing.

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Some data pertaining to stimulated combinational scattering under conditions of anomalous broadening of a laser pulse spectrum are reported. In particular the strong sensitivity of the scattering indicatrix to modulation of the initial radiation is noted.

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19731062

USSR

NAPLATANOV, N. D., MARINOV, Yul. P., VENKOV, P. G.

"Method for Machine Recognition of Biological Information"

Avtomatiz. nauch. issled. na osnove primeneniya ETSVM [Automation of Scientific Research by the Use of Digital Computers -- Collection of Works], Novosibirsk, 1971, pp 380-384 (Translated from Referativnyy Zhurnal - Kibernetika, No 8, 1973, Abstract No 8 V697) by the authors)

Translation: A method is suggested for recognition of repeating biological signals, based on the principle of agreement between the input signal and a set of standard signal patterns, and a criterion is suggested for estimation of the accuracy of recognition.

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USSR

UDC 577.154.5

SHERSHNEVA, L. P., and VENKSTERN, T. V., Institute of Molecular Biology, USSR Academy of Sciences, Moscow

"Enzymatic Synthesis of Some Dinucleoside Monophosphates and Their Hydrolysis by Snake Venom Phosphodiesterase"

Moscow, Molekulyarnaya Biologiya, Vol 5, No 3, May/Jun 71, pp 420-426

Abstract: The dinucleoside monophosphates guanylyl-3', 5'-uridine, guanylyl-3', 5'-pseuduridine, and guanylyl-3', 5'-dihydrouridine were synthesized. Guanylyl-RNAse obtained from the culture fluid of *Actinomyces aureoviticillatus*. Guanylyl-3', 5'-uridine and guanylyl-3', 5'-pseudouridine were subjected to hydrolysis by snake venom phosphodiesterase obtained from *Vipera lebetina*. It was found that guanylyl-3', 5'-pseudouridine is hydrolyzed at a much slower rate than guanylyl-3', 5'-uridine.

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Acc. Nr:

AP0044694

Ref. Code: UR 0463

PRIMARY SOURCE: Molekulyarnaya Biologiya, 1970, Vol 4, Nr 1,
pp 76-96

TRE PRIMARY STRUCTURE OF VALINE TRANSFER RNA I.
3. THE RECONSTRUCTION OF THE MOLECULE

Mirzabekov, A. D.; Aksel'rod, V. D.

Venkater, T. V.; Li, L.; Krutilina, A. I.; Bayev, A. A.

Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

The final stages of analysis of the valine tRNA I from *Saccharomyces cerevisiae* and the reconstruction of the molecule is described. Large fragments (metamers) were obtained from the separated 3' and 5'-halves of tRNA^{Val} and their oligonucleotide composition was determined by means of a microchromatographic method. The tRNA^{Val} primary structure was formulated.

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Acc. Nr: **AP0014697**

Ref. Code: UR 0463

PRIMARY SOURCE: *Molekulyarnaya Biologiya*, 1970, Vol 4, Nr 1,
pp 97-109

THE PRIMARY STRUCTURE AND SOME PHYSICAL PROPERTIES
OF YEAST VALINE TRANSFER RNA 3

A. I. KRUTILINA, A. D. MIRZABEKOV, T. V. YENKSTERN
and A. A. BAYEV

Institute of Molecular Biology, Academy of Sciences, USSR, Moscow

Valine transfer RNA 3 was isolated from *Saccharomyces cerevisiae*. Its content was 0.3 per cent in the total tRNA and 5—7 per cent in the valine tRNA. The purity of the preparation was 75—80 per cent. The partial analysis of pyrimidyl- and guanyl-RNase oligonucleotides of tRNA^{Val}₃ revealed the nucleotide sequence of tRNA^{Val}₃ to be probably the same as compared with that of tRNA^{Val}₁. Chromatography on MAK (methylated serum albumin sorbed on kieselgel) column, gel filtration on Sephadex and melting curve determination of

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$\text{tRNA}_3^{\text{Val}}$ and $\text{tRNA}_1^{\text{Val}}$ gave identical results. The distribution coefficients of $\text{tRNA}_1^{\text{Val}}$ and $\text{tRNA}_3^{\text{Val}}$ in isopropanol-formamide-phosphate bufer, pH 6.0, were the same. Thus the physical properties of $\text{tRNA}_1^{\text{Val}}$ and $\text{tRNA}_3^{\text{Val}}$ after their purification had no significant differences. The different behavior of $\text{tRNA}_1^{\text{Val}}$ and $\text{tRNA}_3^{\text{Val}}$ in the countercurrent distribution system may be explained by the assumption that $\text{tRNA}_3^{\text{Val}}$ is an unstable physical modification of $\text{tRNA}_1^{\text{Val}}$.

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19771432

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UDC 547.963.3

MIRZABEKOV, A. D., AKSEL'ROD, V. D., VENKSTERN, T. V., LI, L., KRUTILINA, A. I., and BAYEV, A. A., Institute of Molecular Biology Academy of Sciences USSR

"Primary Structure of Valine Transfer RNA 1 From *Saccharomyces cerevisiae*. 3. Reconstruction of the Molecule"

Moscow, *Molekulyarnaya Biologiya*, No 1, 1970, pp 76-96

Abstract: The first stage of analysis of the primary structure of valine tRNA 1 from *Saccharomyces cerevisiae* and the final reconstruction of the molecule are described. The procedure required obtaining large fragments (metamers) from the separated 3' and 5' halves of tRNA₁^{Val} using guanyl RNase, and then determining their oligonucleotide composition with a specially devised micromethod of fractionating and identifying the oligonucleotides. The sequence of the oligonucleotides within each metamer was established by comparing their composition. The tRNA₁^{Val} molecule was reconstructed by overlapping both the oligonucleotides of the pyrimidyl and guanyl ribonuclease hydrolysates of the whole molecule and the metamers of its halves.

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1/2 027 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--INFRARED SPECTRA OF SOME FURAN AND 2,5,DIHYDROFURAN DERIVATIVES -U-
AUTHOR--(04)-EYDUS, YA., LOLYA, D.O., VENTERS, K., GRINVALDE, A.
COUNTRY OF INFO--USSR
SOURCE--LATV. PSR ZINAT. AKAD. VESTIS 1970, (2), 18-25
DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--IR SPECTRUM, FURAN, ABSORPTION BAND SPECTRUM, ORGANIC NITRO
COMPOUND

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--1999/1869 STEP NO--UR/0197/70/000/002/0018/0025
CIRC ACCESSION NO--AP0123657
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0123657

ABSTRACT/EXTRACT--(U) GP-O- ABSTRACT. MICROFICHE OF ABSTRACT CONTAINS GRAPHIC INFORMATION. THE IR SPECTRA OF 2,5-SUBSTITUTED FURANS (I) AND DIHYDROFURAN (II) WERE DETD. I: X, R EQUALS NO SUB2, H; NO SUB2, ME; NO SUB2, COAC; NO SUB2, CH(OAC)SUB2; H, COAC; H, CH(OAC); AND NO SUB2, 2,NITRO,5,FURYL; II: X, R EQUALS NO SUB2, H; NO SUB2, COAC; NO SUB2, CH(OAC) SUB2; AND OAC, H. ALL THESE SPECTRA POSSESS CHARACTERISTIC ABSORPTION AT 1381-1405, 1485-1525, 1571-1605, AND 1421-1034 CM PRIME NEGATIVE1. THE LAST BAND IS ATTRIBUTED TO COC. IN II THIS BAND IS DISPLACED TO 1019-1033 CM PRIME NEGATIVE1. ABSORPTIONS AT 1231 AND 1229, IN II, ARE DUE TO UPSILON SUBAS OF C:O, NOT TO UPSILON SUBAS OF COC. UPSILON SUBS AND UPSILON SUBAS OF NO SUB2, IN I, ARE AT 1340-1360 AND AT 1505-1535 CM PRIME NEGATIVE1. THOSE OF II AT 1380-1382 AND AT 1580-1582 CM PRIME NEGATIVE1, RESP. ABSORPTION OF NO SUB2, AT II, 1380-1382, INTERFERE WITH DELTA SUBS H-C, OF OAC. NO SUB2 IN I DOES NOT CAUSE ANY DISPLACEMENT OF THE BANDS OF CO SUB2 ME, BUT CAUSES DISPLACEMENTS IN II. THE OAC GROUP IS LESS SENSITIVE. ABSORPTION OF ME IS NOT EFFECTED BY NO SUB2, IN BOTH CASES, AND NO RELATION COULD BE ESTABLISHED CONCERNING THE INTERFERENCE OF THE FREQUENCIES OF THESE GROUPS. COC HAS LITTLE INFLUENCE ON THE DELOCALIZATION OF ELECTRONS. THESE PHENOMENA ARE MAINLY DUE TO THE EFFECT OF CONJUGATION. FACILITY: LATV. GOS. UNIV. IM. STUCKI, RIGA, USSR.

UNCLASSIFIED

USSR

UDC 519.2+519.9

V
VENTSEL', A. D. and FREYDLIN, M. I.

"Small Random Perturbations of Dynamic Systems"

Moscow, Uspekhi Matematicheskikh Nauk, Vol 25, No 1, Jan/Feb 70, pp 3-55

Abstract: The effect of small random perturbations of the white noise type

$$\dot{x}_t^\varepsilon = b^\varepsilon(x_t^\varepsilon) + \varepsilon \sigma(x_t^\varepsilon) \dot{\xi}_t$$

on a dynamic system $\dot{x}_t = b(x_t)$ is studied, where ξ_t is an r -dimensional Wiener process and $b^\varepsilon(x) \rightarrow b(x)$ as $\varepsilon \rightarrow 0$. The effect of these perturbations over large time intervals which increase with decreasing ε is emphasized. Two problems are discussed: the behavior of the invariant measure μ^ε of the process x_t^ε as $\varepsilon \rightarrow 0$, and the distribution of the position of the trajectory of x_t^ε immediately after leaving the compact region. The probability that the trajectory of the process x_t^ε in time $[0, T]$ does not deviate from a certain smooth function ϕ_t by more than δ is calculated. It was found that for small ε and δ the major term in this

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VENTSEL', A. D., et al., Uspekhi Matematicheskikh Nauk, Vol 25, No 1, Jan/Feb 70, pp 3-55

probability has the form $\exp \{-1/2\epsilon^2 I(\phi)\}$, where $I(\phi)$ is some non-negative functional of ϕ_t . The function $V(x, y)$, the minimum of $I(\phi)$ with respect to the set of functions ϕ connecting points x and y , is used in formulating the answer to both problems. In both problems the process approaches a certain Markov chain and the answer depends on the behavior of the function $V(x, y)$ on graphs related to this chain. The paper was read at a meeting of the Moscow Mathematical Society on 25 March 1969.

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USSR

UDC 612.1+616.1(99)

DERYAPA, N. R., SHASTIN, I. V., and VENTSENOSTSEV, B. B.

"Physiology and Pathology of the Circulatory System in the Antarctic"

Moscow, Antarktika, Doklady Komissii, No 11, 1972

Translation of abstract: The article presents the results of systematic studies on blood circulation in polar explorers during acclimation at the coastal stations and on sled-tractor trips. The authors observed 303 persons in the course of four expeditions. They found that distinct and varied changes take place in the functioning of the circulatory system in the course of acclimation. Over the winter the men developed changes in blood pressure and heart rate, sonorosity of the heart sounds, functional murmurs, shifts in myocardial bioelectrical activity of varying pathological significance, disturbances of myocardial contractility, and changes in the main hemodynamic parameters.

The absolute majority of explorers showed various physiological acclimation changes in the circulatory system of an adaptive nature. However, pathological changes indicative of the onset of cardiovascular disease were common. The relative significance of the pathological changes was by no means the same in the different expeditions. In the Central Antarctic,
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USSR

DERYAPA, N. R., et al., Antarktika, Doklady Komissii, No 11, 1972

the circulatory changes were more pronounced than on the coast. An important means of preventing serious cardiological pathology is strict medical screening of candidates for the expeditions. Further improvement in the living and working conditions of the men is also important.

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USSR

UDC 616.001.27-036.11-02:/617.55+617.582/-001.29

GEMBITSKIY, Ye. V., KOLESNIK, F. A., and VENTSEVOSTSEV, B. B., Chair of Military Field Therapy, Military Medical Academy imeni S. M. Kirov

"A Case of Acute Radiation Sickness in Man as a Result of External Gamma-Irradiation. I."

Moscow, Meditsinskaya Radiologiya, Vol 15, No 8, Aug 70, pp 48-54

Abstract: As a result of gross disregard of safety regulations, a healthy male subject 27 yrs of age was exposed to local irradiation with gamma-rays from a Co^{60} source with an activity of 356 mc. The subject, who did not wear protective clothing, removed a Co^{60} ampule from its container, placed it on top of a brick barrier, and lay down on top of the barrier, bringing the ampule into contact with the lower part of his abdomen. He then worked for 30 min in the same position, with the ampule remaining in contact with his body. As a result, he sustained a severe radiation lesion in the left iliac region, which comprised an external radiation burn of the abdomen and injury to the abdominal wall and underlying intestines. Three months after the accident, stenosis of the sigmoid developed, accompanied by intestinal obstruction due to fusion of the sigmoid to the abdominal wall. An operation was conducted in which an artificial outlet to serve as a substitute anus was created. No severe complications followed the

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GEMBITSKIY, Ye. V., et al., Meditsinskaya Radiologiya, Vol 15, No 8, Aug 70, pp 48-54

operation, but general metabolic and trophic disturbances persisted and healing at the site of local radiation injury proceeded very slowly. The patient was treated with antibiotics and vitamins, was given blood transfusions on the 62nd --66th day of illness, and received intravenous drip infusions of 0.25% novocaine solution to alleviate abdominal pains in the region of the burn. He was also treated with injections of protein hydrolysates. Relationships between local injury and general radiation trauma will be discussed in a future paper.

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1/2 020
UNCLASSIFIED
PROCESSING DATE--27NOV70
TITLE--COMPLEX PROTECTIVE RELAY OPERATION SIGNALLING APPARATUS USING NON
CONTACTING COMPONENTS -U-
AUTHOR--(04)-PAPERNO, L.B., ARONSON, V.N., POROTSKIY, B.S., VENTSLOVAS,
COUNTRY OF INFO--USSR
SOURCE--ELEKT. STANTSII (USSR), VOL. 41, NO. 3, P. 56-9 (1970)
DATE PUBLISHED-----70
SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.
TOPIC TAGS--ELECTRIC RELAY, THYRATON, SIGNAL ELEMENT, COLD CATHODE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/0505
STEP NO--UR/0104/70/041/003/0056/0059
CIRC ACCESSION NO--AP0135968
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0135968

ABSTRACT/EXTRACT--(U) GP-O-

ABSTRACT. A DESCRIPTION IS GIVEN OF THE BASIC PRINCIPLE OF COMPLEX PROTECTIVE RELAY OPERATION SIGNALLING EQUIPMENT EMPLOYING NON CONTACTING COMPONENTS WHICH HAS BEEN UNDER TEST IN THE LITORSK STATE REGIONAL POWER STATION. THE EQUIPMENT CONSISTS OF COLD CATHODE THYRATRON SIGNALLING ELEMENTS, A CENTRAL ACOUSTIC WARNING CIRCUIT AND A CENTRAL VISUAL WARNING CIRCUIT FOR UNRECORDED SIGNALS.

UNCLASSIFIED

USSR

UDC 612.886:612.181

MALIKOVA, S. N. and VENTSEL', M. D.

"Auto- and Cross-Correlation Analysis of Reactions of Vasomotor Neurons to Adequate Stimulation of the Vestibular Apparatus"

Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No 10, 1971, pp 9-11

Abstract: In experiments on anesthetized cats, the impulse activity of 81 vasomotor neurons and the pulse wave of arterial pressure were recorded simultaneously in response to vestibular stimulation by vertical rocking on a stand. Auto- and cross-correlation analysis revealed two types of cell reactions: (a) most neurons (58) followed the rhythm of rocking, i.e., they acquired a new rhythm related to the up-and-down movements of the stand; (b) the other neurons (23) failed to exhibit any direct connection between neuronal activity and rocking. In some of the latter, the rhythm of impulse activity corresponded to that of the pulse wave of arterial pressure.

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USSR

Aerospace Medicine

UDC: 611.85

CHEKHONADSKIY, N. A., VENTTSEL', M. D., and PAVLOV, G. I.

"Function of the Otolithic Apparatus in Sinusoidal Acceleration Activity"

Moscow, Izvestiya Akademii nauk SSSR--Seriya biologicheskaya, No 5, 1972, pp 707-716

Abstract: The authors find that neither foreign nor domestic literature has shed much light on the functional activity of the otolith apparatus. Yet, such clarification is needed in the study of the peculiarities of manned aircraft since the activity of the human pilot is affected by the influences of acceleration and weightlessness on his organism. For the purpose of adding to such clarification, the authors describe experiments on cats for studying the bioelectrical activity of the vestibular nerve in the middle ear on the level of the Scarpa ganglion under the action of sinusoidal accelerations. The special stand used in the experiments, with the animal subject shown, is reproduced in a photograph. It is so arranged as to permit periodically varying motion of the subject animal in the vertical plane. The experimental method is explained, and a mathematical model of the

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USSR

UDC: 611.85

CHEKHONADSKIY, N. A., et al, Izvestiya Akademii nauk SSSR--Seriya
biologicheskaya, No 5, 1972, pp 707-716

Scarpa ganglion is set up. It is found that the experimental data
agrees with the data of the mathematical model.

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USSR

UDC 536.46:533.6

SALAMANDRA, G. D., VENTTSEL', N. M., FEDOSEYEVA, I. K.

"Measurement of Gas Velocity in the Combustion of Highly Combustible Gas Mixtures in Tubes"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 370-373 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B953)

Translation: The rate of a fresh mixture ahead of the combustion front in a tube of square cross section with glass windows was measured. The thermal heterogeneities produced with the aid of nichrome shelves of diameter 0.3 mm were used as a measure. High-speed photography of the Tepler picture of the gas flow was conducted. In preliminary experiments (where the gas was conducted in the motion of a shock wave) a discharge energy was selected under which the difference between the calculated and measured velocity of the gas did not exceed 1-2%. The accuracy of the measurement is higher as the density of the measure differs less from the density of the surrounding medium. The energy of the discharge should therefore be not too great (but not too small since otherwise the time over the course of which one must conduct the measurement will be insufficient).

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USSR

SALAMANDRA, G. D., et al, Gorennye i vzryv, Moscow, "Nauka", 1972, pp 370-373

Graphs show the profiles of the gas velocity ahead of the combustion front (moving with variable acceleration) in a stoichiometric hydrogen-oxygen mixture at different points of time (in the interval 0.1-0.45 msec). The motion of the gas ahead of the flame front is described by a simple wave. In measuring the rate of motion of the combustion products, thermal measures were produced with the aid of a high-frequency spark discharge. Also measured was the velocity w of the contact discharge upon detonation of a stoichiometric methane-oxygen mixture in a tube of square cross section 20×20 mm. The experimental value w was approximately 16% lower than the calculated value. It is proposed that this difference is associated with losses to friction and heat transfer to the wall. N. N. Bakhman.

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USSR

VENTTSEL', Ye. S.

"Approximation of a Stream of Events with an Unstable Poisson Flow"

Tr. Mosk. In-ta Inzh. Zh.-d. Transp. [Works of Moscow Institute of Railroad Transport Engineering], 1972, No 413, pp 3-20 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V359 by the author).

Translation: In practice, it is frequently necessary to analyze streams of events, the stability of which is not clear in advance. This article studies the problem of selection of one of two hypotheses, of which the first (zero hypothesis) consists in that the flow is stable, while the second (competing hypothesis) is that its intensity is a periodic function of time. For the case when the second hypothesis is more likely, a method is presented for approximation of the flow of events with an unstable Poisson flow.

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1/2 009
UNCLASSIFIED
TITLE--ELECTRON DIFFRACTION STUDY OF THE STRUCTURE OF (CH SUB3)SUB3
NEGATIVE GEC SUB5 H SUB5 CYCLOPENTADIENYLTRIMETHYLGERMANIUM -U-
AUTHOR--(05)--USTYNYUK, YU.A., STRUCHKOV, YU.T., ALEKSEYEV, N.V.,
VENYAMINOV, N.N., RONOVA, I.A.
COUNTRY OF INFO--USSR
PROCESSING DATE--02OCT70
SOURCE--ZH. STRUKT. KHIM. 1970, 11(1), 127-9
DATE PUBLISHED-----70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ELECTRON DIFFRACTION ANALYSIS, GERMANIUM COMPOUND, MOLECULAR
STRUCTURE, COMPLEX COMPOUND, CYCLIC GROUP
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1987/0315
STEP NO--UR/0192/70/011/001/0127/0129
CIRC ACCESSION NO--AP0103970
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0103970

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ELECTRON DIFFRACTION INVESTIGATION OF THE TITLE COMPD. SHOWED THAT THE STRUCTURE CONTAINS A LOCALIZED SIGMA GE-C BOND BETWEEN THE C SUB5 H SUB5 RING AND THE GEME SUB3 GROUP. THE GE ATOM HAS TETRAHEDRAL ENVIRONMENT, WITH 4 EQUAL GE-C BONDS (1.97 ANGSTROM EACH) AND LIES IN A SYMMETRY PLANE OF THE C SUB5 H SUB5 RING. THE C SUB5 H SUB5 RING IS NOT PLANAR. ONE C ATOM LIES IN A PLANE FORMING A DIHEDRAL ANGLE OF 24 PLUS OR MINUS 4DEGREES TO THE PLANE OF OTHER FOUR C ATOMS, WHICH FORM A BUTADIENE LIKE GROUPING. THE GE-C BOND FORMS AN ANGLE OF 52 PLUS OR MINUS 4DEGREES TO THE PLANE CC(GE)C, THE THREE C ATOMS BEING A FRAGMENT OF THE C SUB5 H SUB5 RING. THE C-C BOND LENGTHS IN THE C SUB5 H SUB5 RING ARE 1.50 AND 1.46 ANGSTROM.

UNCLASSIFIED

1/2 008
UNCLASSIFIED
TITLE--ELECTRON DIFFRACTION STUDY OF THE MOLECULAR STRUCTURE OF
TRIMETHYLCYCLOPENTADIENYLSILANE -U-
AUTHOR--(05)--VENYAMINOV, N.N., USTYNYUK, YU.A., ALEKSEEV, N.V., RONOVA,
I.A., STRUCHKOV, YU.Y.
COUNTRY OF INFO--USSR
SOURCE--ORGANOMETAL. CHEM. 1970, 22(3), 551-5
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--ELECTRON DIFFRACTION ANALYSIS, MOLECULAR STRUCTURE, CYCLIC
GROUP, ORGANIC SILANE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--2000/1981
CIRC ACCESSION NO--AP0125570
STEP NO--NE/0000/70/022/003/0551/0555
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125570
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE MOL. STRUCTURE OF TRIMETHYLCYCLOPENTADIENYLSILANE, C SUB5 H SUB5 SIME SUB3, HAS BEEN STUDIED BY ELECTRON DIFFRACTION IN THE VAPOR PHASE. THE SI ATOM IS BONDED BY THE LOCALIZED SIGMA BOND WITH ONE OF THE CYCLOPENTADIENYL CARBON ATOMS. THE SI-C BOND DISTANCES ARE 1.90 ANGSTROM. THE CYCLOPENTADIENYL RING HAS AN "ENVELOPE" CONFORMATION, THE DIHEDRAL ANGLE BETWEEN PLANAR 4 AND 3-MEMBERED FRAGMENTS OF THE RING BEING 22DEGREES. THE SI-C BOND MAKES AN ANGLE OF 56DEGREES WITH THE PLANE OF THE BENT OUT "ENVELOPE FLAP". ASSUMING THE QUALITY OF ALL C-H BOND LENGTHS AND ALSO OF THREE C-C BOND LENGTHS WITHIN THE PLANAR 4-MEMBERED FRAGMENT OF THE CYCLOPENTADIENYL RING, THE FOLLOWING VALUES ARE OBTAINED: GAMMA(C-H) EQUALS 1.11, GAMMA(C-C) EQUALS 1.53, GAMMA(C:C) EQUALS 1.40 ANGSTROM. FACILITY: INST. ORG.-ELEM. COMPD., MOSCOW, USSR.

UNCLASSIFIED

USSR

VEPKHVADZE, T. V.

UDC 511

"On the Representation of Numbers by Positive Gaussian Binary, Quadratic Forms"

Tr. Tbilis. mat. in-ta. AN GruzSSR (Works of Tbilisi Mathematics Institute,
Academy of Sciences Georgian SSR), 1971, 40, pp 21-58 (summary in Georgian)
(from RZh-Matematika, No 2, Feb 72, Abstract No 2A176 by A. MALYSHEV)

Translation: Formulas are obtained for the quantity of number representations
by the positive forms $(a, 2b, c) = ax^2 + 2bxy + cy^2$ in the cases $(3, +2, 12)$,
 $(5, +4, 9)$. A preliminary study is made of a singular series of the form $(a, 2b,$
 $c)$ for any whole numbers a, b, c with the condition $a > 0, ac - b^2 > 0$.

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USSR

UDC: 681.3

VEPRIK, V. N., KAN, V. G., ZHIRATKOV, V. I., MIKHASHOV, A. I.
"Some Singularities in the Construction of Distributed Universal Computer Systems"

V sb. Vychisl. sistemy (Computer Systems--collection of works),
vyp. 39, Novosibirsk, 1970, pp 137-146 (from RZh-Matematika,
No 11, Nov 71, Abstract No 11V788)

Translation: Distributed universal computer systems are
classified with regard to types of data transmission networks.
The authors consider the peculiarities of distributed universal
computer systems with fixed directional connections
and universal computer systems with commutation of messages.
Note is taken of the effect which these peculiarities have on
the productivity of the computer system. V. Mikheyev.

1/1

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USSR

UDC: 681.3

VEPRIK, V. N., ZHIRATKOV, V. I., KAN, V. G., MIKHASHOV, A. I.

"Some Peculiarities in the Construction of Distributed Universal Computer Systems"

Vsb. Vychisl. sistemy (Computer Systems--collection of works), vyp. 39, Novosibirsk, 1970, pp 137-146 (from RZh-Kibernetika, No 11, Nov 71, Abstract No: 11V788)

Translation: Distributed universal computer systems are classified with regard to types of data transmission networks. The authors consider the singularities of distributed universal computer systems with single and repeated establishment of communications as well as those with fixed directions of communications, and those with message commutation. Mention is made of the effect which these singularities have on the productivity of universal computer systems. V. Mikheyev.

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USSR

UDC 77

VEPRIK, YA. M., TRUKHIN, M. I., SHELEKHIN, YU. L.

"Electron Centers in Microcrystals of Silver Bromide of a Photoemulsion Sensitized by Amines"

V sb. Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. chuvstvitel'nosti (International Congress on Photographic Science, Moscow, 1970, Nature of Photographic Sensitivity -- Collection of Works), no place of publication given, Vneshtorgizdat, no year given, pp 131-134 (from RZh-Fizika, No 12(I), Dec 70, Abstract No 12D1368)

Translation: The existence of two types of centers, stable and photon-induced electron-excess, was observed by the EPR method in microcrystals of the Ya2 nuclear photographic emulsion at 77°K. The stable centers were observed independent of the exposure; $g = 1.96$ for these. The other centers were induced by light and $g = 2.0036$ for these. The magnitude of the signal of centers of the second type depends on the illumination temperature (maximum at -40°C and disappearance upon heating to +20°C) and correlates with the temperature change in

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USSR

VEPRIK, YA. M., et al, Mezhdunar. kongress po fotogr. nauke, Moskva, 1970, Priroda fotogr. chuvstvitel'nosti, no place of publication given, Vneshtorgizdat, no year given, pp 131-134

light sensitivity. Neither photoinduction of centers of the second type nor heating of the exposed samples have an effect on the signal from stable centers. It follows from a comparison with EPR of free Ag atoms in AgHal and alkali-halide crystals that centers of the second type are not Ag atoms. The hypothesis that dependence of the signal on temperature reports in the dependence of the mobility of interstitial Ag^+ ions was tested in experiments with the introduction of different amines into the emulsion. Their introduction sharply increased the signal of centers of the second type at the temperature maximum, probably due to recombination of photoelectrons with Ag^+ ions from dissociated Ag-amines of the complexes, since differences in the intensification of the signal upon the introduction of different amines correlates with differences in the instability constants of Ag-complexes of the amines. Also possible is a contribution to the signal from photoreduction in the transfer of an electron from the coordinated amine to a central Ag^+ ion in photoexcitation of the complex. 10 references.
A. L. Kartuzhanskiy.

2/2

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1/2 010
TITLE--NONSHRINKING BINDER -U- UNCLASSIFIED
PROCESSING DATE--20NOV70
AUTHOR--(03)--LEYRIKH, V.E., PROKHOROV, V.KH., VEPRIN, I.B.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 192,048
REFERENCE--OTKRYTIYA, IZOBRET., PROM. OBRATSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--01APR70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--CEMENT, PATENT, BLAST FURNACE SLAG, GYPSUM
CENTREL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3002/1445
CIRC ACCESSION NO--AAC128844
STEP NO--UK/0482/70/000/000/0000/0000
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AA0123644

ABSTRACT/EXTRACT--(U) GP-C- ABSTRACT. NONSHRINKING BINDER WAS BASED ON
PORTLAND CEMENT AND AN EXPANDING ADDITIVE. TO EXPAND CEMENT STONE
UNDER AIR DRIED HARDENING CONDITIONS, A MIXT. CONTG.: ARGILLACEOUS
CEMENT 44, GRANULATED BLAST FURNACE SLAG 30, GYPSUM SEMIHYDRATE 20, AND
HYDRATED LIME 4-7 WT. PERCENT AND EQUAL TO 25-35PERCENT ON THE WT. OF
THE BINDER WAS USED FOR THE EXPANDING ADDITIVE.

UNCLASSIFIED

1/2 016
UNCLASSIFIED
TITLE--EXISTENCE OF THE REST POTENTIAL OF CELL NUCLEUS OF THE SALIVARY
GLANDS OF DROSOPHILA FUNEBRIS LARVAE -U-
AUTHOR-(02)-KISLOV, A.N., VEPRINTSEV, B.N.
PROCESSING DATE--13NOV70
COUNTRY OF INFO--USSR
SOURCE--BIOFIZIKA 15(1): 99-103. ILLUS. 1970
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--DROSOPHILA, SALIVARY GLAND, CELL PHYSIOLOGY, BIOPOTENTIAL
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3003/0920
STEP NO--UR/0217/TG/015/001/0099/0103
CIRC ACCESSION NO--AP0129985
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129985

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE VALUE OF THE RESTING POTENTIAL OF THE CELL NUCLEUS OF THE SALIVARY GLANDS OF D. FUNEBRIS LARVAE DOES NOT EXCEED THE EXPERIMENTAL ERROR (NOT MORE THAN 3-5 MB). THE MAXIMUM SPECIFIC RESISTANCE OF NUCLEAR MEMBRANE EQUALS 10 OHM-CM PRIME². SEVERAL LEAPS OF THE POTENTIAL OCCUR DURING THE INSERTION OF THE ELECTRODE INTO THE CELL. THESE CAN BE EXPLAINED BY DAMAGE OF THE CELL MEMBRANE (SHUNTING OF MEMBRANE RESISTANCE) AND THE CHANGE OF ELECTRODE POTENTIAL. FACILITY: INST. BIOL. PHYS., ACAD. SCI. USSR, PUSHCHINO-ON-OKA, USSR.

UNCLASSIFIED

Acc. Nr: **AP0052070**

Ref. Code: **0A0396**

PRIMARY SOURCE: *Patologicheskaya Fiziologiya i
Eksperimental'naya Terapiya*, 1970, Vol 14,
Nr 1, pp 71-72

PARTICIPATION OF HISTAMINE IN THE REFLEX REGULATION OF PULMONARY
METABOLISM

A. I. Veprintsev, F. L. Ginzburg-Gusakova

The role of histamine in the reflex regulation of the pulmonary volume was studied on various animals. It appeared that the highest sensitivity of the neuromuscular apparatus of the lungs to histamine was possessed by guinea pigs, the least — by rats, cats and dogs occupying an intermediate position. Dimedrol, blocking the histaminergic innervation, failed to eliminate the pleuro-pulmonary reflex, but bilateral vagotomy depressed this reflex in the majority of the guinea pigs and cats. A combination of bilateral vagotomy with administration of dimedrol depressed the pleuro-pulmonary reflex in all the guinea pigs.

REEL/FRAME
19820608

1/2 008
UNCLASSIFIED
PROCESSING DATE--09OCT70
TITLE--CALCULATION OF NONISOTHERMAL DESORPTION WITH A HEAT SUPPLY -U-
AUTHOR--(03)--BRANDT, B.B., VERANYAN, R.S., LEBEDEV, O.L.
COUNTRY OF INFO--USSR
SOURCE--TEOR. OSN. KHIM. TEKHNOL. 1970, 4(2) 196-203
DATE PUBLISHED--70
SUBJECT AREAS--CHEMISTRY
TOPIC TAGS--CALCULATION, DESORPTION, POTASSIUM CARBONATE,
MONOETHANGLAMINE, SOLVENT, VAPOR PRESSURE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1584
CIRC ACCESSION NO--AP0112578
STEP NO--UR/0455/70/004/002/0196/0203
UNCLASSIFIED

2/2 008

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0112578

ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. A GENERAL METHOD IS GIVEN FOR THE
CALCN. OF COUNTER CURRENT NONISOTHERMAL DESORPTION OF GAS FROM SOLNS.
CONTG. A NONVOLATILE ABSORBING AGENT (E.G. K SUB2 CO SUB3,
MONOETHANOLAMINE). THE EFFECTIVE TEMP. IN DIFFERENT CROSS SECTIONS OF
THE APP. AND THE MEAN DEVIATION OF THE SOLVENT VAPORS PARTIAL PRESSURE
FROM THE EQUIL. PRESSURE WERE CONSIDERED. FORMULAS AND DIAGRAMS ARE
GIVEN FOR THE OPTIMALIZATION OF THE PROCESS CONDITIONS WITH RESPECT TO
MIN. HEAT CONSUMPTION. THE ANAL. OF THE RECOVERY OF AQ. SOLN. OF
MONOETHANOLAMINE SATD. WITH CO SUB2 IS PRESENTED AS AN EXAMPLE.

UNCLASSIFIED

USSR

VERBA, G. A., ZAPOTYL'KO, V. F.

"The Problem of Calculation of the Reliability of Multicycle Control Systems based on Logic Elements"

Teoriya Optimal'n. Resheniy [Theory of Optimal Solutions -- Collection of Works], Kiev, 1972, pp 14-19 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V332, by I. Kovalenko).

Translation: A model of reliability of a system with exponential distribution of time between failure of elements is studied. In calculating reliability, the possibility of various failure states is considered, but only in the binomial plan: only the fact of failure of an element within a given time interval is significant, not the actual moment of failure. The algorithm for calculation of reliability is run on the M-220 computer using the SLANG programming system.

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Pathology

USSR

UDC 616.988.7-092.9-07:616.453.-008.6-07

GONCHAROV, N. P., VERBERGER, K., SHUBERT, K., and SHEVTSOVA, Z. V., Institute of Experimental Pathology and Therapy, Academy of Sciences USSR, and Institut e of Microbiology and Experimental Therapy, German Academy of Sciences (Jena)

"Secretory Function of the Adrenal Cortex in Macaques With Monkey Hemorrhagic Fever"

Moscow, Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya, No 2, 1971, pp 31-37

Abstract: Forty compounds were isolated from the adrenal blood of healthy and sick rhesus monkeys. Thirteen of these were steroid hormones identified by infrared spectrography: hydrocortisone, aldosterone, corticosterone, 17-alpha-hydroxyprogesterone, 17-hydroxy-11-desoxycorticosterone, steroid-lactone (11 β , 18-dihydroxy-4-androsten-3-one-17 β -acids lactone 20 \rightarrow 18), dehydroepiandrosterone, 7-ketodehydroepiandrosterone, androstenedione, 11 β -hydroxyandrostenedione, adrenosterone, pregnenolone, and progesterone. Hemorrhagic fever induced by inoculating the animals with the Sukhumi-64 strain of the virus sharply impaired the secretory function of the adrenal cortex. The degree of impairment was determined by the severity of the infection. The secretion of aldosterone and corticosterone increased in all stages of the

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USSR

GONCHAROV, N. P., et al., *Patologicheskaya Fiziologiya i Eksperimental'naya Terapiya*, No 2, 1971, pp 31-37

disease while that of hydrocortisone decreased sharply. The glucocorticoids are known to play a major role in the nonspecific defensive reactions of the body. Hence, inhibition of the biosynthesis of the most active glucocorticoid, hydrocortisone, in the severely ill monkeys helped to lower their general resistance, thus aggravating the course of the disease.

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Pesticides

USSR

UDC 615.917

VERBYLOV, A. A.

"Basis for Hygienic Standards When Using Metathion in Agriculture"

V sb. Gigiyena primeneniya, toksikol. pestitsidov i klinika otrabl. (Hygiene of the Application and Toxicology of Pesticides and the Clinical Aspects of Poisoning — collection of works), vyp. 9, Kiev, 1971, pp 57-59 (from RZh-Farmakologiya. Khimioterapevticheskiye sredstva. Toksikologiya, No 2, Feb 72, Abstract No 2.54.772)

Translation: The DL_{50} methylnitrophos (I; metathion; foliothion; sumithion) for a single introventricular injection was 420 mg/kg for mice and 500 mg/kg of for rats. In rats and mice on injecting I in the amount of 1/100 DL_{50} for 6 months, a loss in weight and reduction in activity of the cholinesterase of the blood and tissues of the internal organs (from 20 to 90%) were observed. When treating an orchard with a 0.15% aqueous solution of 50% concentrate of the I emulsion for a calculated 2.7 kg/hectare, the residual amounts of I in the mazzard fruit at treatment time was 0.33 mg/kg, on the surface of the leaves, 3 mg/kg and on the surface of the soil, 0.5 mg/kg. Twenty-four hours after treatment, the residual amounts of I in the mazzard fruit was 0.31 mg/kg, after 3 days 0.27 mg/kg, on the fifth day 0.14 mg/kg, and after 10 days no I was detected. The I remained in the soil for 5-10 days. The permissible residual amounts of I of 0.1 mg/kg is recommended for food products.

USSR

UDC 546.791'831

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VERBETSKIY, V. N., KOVBA, L. M.

"Reactions of ZrO_2 with U_3O_8 "

Moscow, Zhurnal Neorganicheskoy Khimii, Vol 15, No 7, 1970, pp 1728-1730

Abstract: Through X-ray phase analysis it was established that solid solutions of $ZrO_2 \cdot nU_3O_8$ are formed in the system $ZrO_2 - U_3O_8$, and their parameters were determined. The phase $ZrO_2 \cdot nU_3O_8$ has a marked region of homogeneity, and when it is oxidized with oxygen under pressure, a hexagonal phase $(Zr, U)O_x$, a rhombic phase $(Zr, U)O_x$, and alpha- UO_{3-x} are formed. The degree of oxidation of uranium is $O/U = 2.90-1.91$. Pure uranium monoxide-dioxide under these same conditions is oxidized to gamma- UO_3 . Lattice parameters of the new phases were determined. For the hexagonal phase $(Zr, U)O_x$, $a = 4 \times 3.958$ and $c = 4 \times 4.157 \text{ \AA}$. In the remaining cases, parameters of the subcells were determined.

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USSR

ROMANKO, A. M., VERBICHEASHVILI, K. G., and OKROPIRIDZE, Z. A.

"Modification of the Differential Ballistooscillograph of the Extremities"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 69, No 3, Dec 72,
p. 772

Translation of Russian Abstract: Schematic wiring diagrams of the modified ballistooscillograph of extremities are presented. Several curves of the differential ballistooscillogram of the extremities obtained on different individuals (athlete, patient) are given. The modifications introduced into the design of the ballistooscillograph have transformed it into a universal sensing device, with a cranio-caudally directed functions. This device makes it possible to record a ballistocardiogram, as well as to prepare differential ballistooscillograms of extremities without changing the position of a patient. This was impossible to do before with any known type of ballistooscillograph. The modified instrument is applicable for the examination of bed patients, as well as in sports medicine. Curves obtained with the modified ballistooscillograph are of a definite configuration, without any technological aftereffects. The clinical testing of the device indicated its suitability in medical practice. Curves recorded with it showed the rehabilitation signs in the function of differential extremities after surgery.

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USSR

UDC 621.371

VERBIN, Yu. P.

"Errors Tolerated in Computing Transient Processes in a Semi-conducting Medium"

Moscow, V sb. X Vses. konf. po rasprostr. radiovoln. Tezisy dokl. Sekts. 6 (Tenth All-Union Conference on the Propagation of Radio Waves; Report Theses; Section 6--collection of works) "Nauka," 1972, pp 50-55 (from RZh--Radiotekhnika, No 10, 1972, Abstract No 10A390)

Translation: An estimate is made of the order of error permitted by the author as a result of neglecting the contribution of the vertical component of the electric field to derive a formula for computing the instantaneous signal amplitude at the output of a receiver connected to a vertical frame antenna in the lower half-space (see the collection Problemy difraktsii i rasprostraneniya voln -- Problems in Wave Diffraction and Propagation -- LGU, 1969, 2). It is shown that this error is small. One table, bibliography of three. N. S.

1/1

USSR

UDC 576.809.518

VERBINA, N. M., SMIRNOVA, L. S., and DANIL'CHENKO, R. N., All-Union Correspondence Institute of the Food Industry, Moscow

"The Antibacterial Activity of Some Quaternary Ammonium Compounds"

Moscow, Prikladnaya Biokhimiya i Mikrobiologiya, Vol 9, No 4, 1973, pp 575-578

Abstract: An investigation is made of the antiseptic properties of some new surface-active quaternary ammonium salts with respect to typical brewery microflora. The antibacterial action of Bradozol (an imported preparation) and four domestic preparations, namely Cationate 2B, Cationate C12, cetylpyridinium chloride, and sulfoureide, was tested against three cultures: beer sarcina (*Pediococcus damnosus* and *Pediococcus pernicius*), intestinal bacilli (*Escherichia coli*), and slime-forming bacteria comprising a mixture of cultures of *Pediococcus viscosum* and bacteria of the *Pseudomonas* genus. It was established that the least bactericidal activity was found in sulfoureide, and high activity was manifested by Cationate 2B, Cationate C12 and Bradozol. 2 tables. 3 references.

1/1

USSR

UDC 611.817.18.06-019:399.537

VERBITSKAYA, L. B., Laboratory of Architectonics, Institute of the Brain,
Academy of Medical Sciences USSR, Moscow

"Structure of Cerebellum Nuclei in the Dolphin (*Delphinus delphis*)"

Leningrad, Arkhiv Anatomii, Gistologii i Embriologii, Vol 59, No 10, Oct 70,
pp 26-33

Abstract: A study of the structure of the dolphin cerebellum indicated that four different nuclei were present: medial; dorso-lateral, corresponding to the lateral of other mammals; and anterior and posterior ventro-lateral nuclei, corresponding to the two intermediate nuclei of terrestrial mammals. The axis of the three lateral nuclei was displaced in relation to that of the analogous nuclei of terrestrial mammals, owing to the large size of the paraflocculus (typical of cetaceans). The cerebellum as a whole was unusually large. The dorso-lateral nucleus consisted of four portions that differed in structure and density of cells. The ventro-lateral nuclei, particularly the anterior, had connections with vestibular nuclei and with the ventral cochlear nucleus. The specific morphological features of the structure of the cerebellar nuclei of the dolphin are presumably related to distinct characteristics of motor functions and should be studied more extensively from this standpoint.

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USSR

UDC 621.373.421.13

BARZHIN, V.YA., BAKLANOV, G.D., KOSHEVNIKOVSKIY, G.V., RASSKAZOV, I.E.,
VERBITSKAYA, T.N.

"Small-Size Crystal Oscillators, Efficient In A Wide Range Of Temperatures"

V sb. Radiotekhnika letatel'n. apparatov (Aircraft Radio Electronics--
Collection Of Works), No 2, Kar'kov, Kar'kov Aviation Institute, 1971, pp 49-55
(from RZh:Radiotekhnika, No 2, Feb 72, Abstract No 2D367)

Translation: Problems are considered of thermostabilization of crystal oscillators by ferroelectric materials which possess the effect of temperature auto-stabilization. The results are presented of an experimental investigation of a crystal oscillator at 25 MHz, thermostabilized by Type Vn-2 ferroelectrics. The possibility is shown of the construction of such an oscillator with a buffer stage, with the dimensions of a bantam tube. 5 ill. 3 ref. Summary.

1/1

USSR

UDC 621.219.4

VERBITSKAYA, T. N., IVANOV, I. V., MOROZOV, N. A.

"Dielectric and Nonlinear Properties of the VK-2 and VK-7 Varicaps in the Microwave Band"

Elektron. tekhnika. Nauch.-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Parts), 1971, vyp. 1(22), pp 29-39 (from RZh-Radiotekhnika, No 11, Nov 71, Abstract No 11V493)

Translation: An investigation is made of the dielectric properties of VK-2 and VK-7 varicaps on frequencies of 1, 500 and 1000 MHz over a wide temperature range. The coefficients of static and dynamic nonlinearity of the ferroelectric ceramic are determined in the phase transition region. It is shown that in a wide temperature range encompassing the ferroelectric phase transition point, the relation between the microwave permittivity and the biasing electric field is described by the formula $\epsilon(E, T) = \epsilon(0, T) \cdot [a + k(T)|E_0|]^{-1}$, where $a = a_0(E, T) \approx 1$; $k(T)$ is proportional to $\epsilon^2(T)$. A new phenomenon is observed: in weak pulse fields, an anomalously high dynamic nonlinearity arises briefly in the ferroelectric phase. The nonlinear properties of ceramic and single crystals are compared. Resumé.

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USSR

UDC: 621.319.4

SEMENOV, V. S., PLUZHNIKOV, V. M., VERBITSKAYA, T. N.

"Investigation of the Piezoelectric Constants of Type VK Varicaps and Possibilities for Controlling Them"

Elektron. tekhnika. Nauch-tekhn. sb. Radiodetali (Electronic Technology. Scientific and Technical Collection. Radio Components), 1970, vyp. 4(21), pp 115-119 (from RZh-Radiotekhnika, No 5, May 71, Abstract No 5V318)

Translation: The authors present the results of an experimental study of the piezoelectric and mechanical constants of type VK varicaps. Possible ways to use the piezoelectric properties of varicaps in some devices are pointed out. Resumé.

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Public Health, Hygiene and Sanitation

UDC 614.73:[621.311.25:621.039

USSR

ARKHANGEL'SKAYA, I. G., TSUKANOV, I. F., VERBITSKIY, B. V., and RYAKHOVSKIY, A. V.,
Institute of Biophysics, Moscow

"Characteristics of Radioactive Aerosols in the Atmosphere of Premises of the
Novo-Voronezh Atomic Electric Power Station"

Moscow, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 41-43

Translation: One of the possible factors of the effect of the industrial environment on personnel employed at the atomic electric power station (APS) is the contamination of premises with radioactive aerosols. We determined the concentration of these aerosols in air in the principal industrial premises during various periods of work at the Novo-Voronezh APS, studying the isotope composition of the aerosols, and the doses emitted by them in critical organs of service personnel. To determine the aerosol contents, air samples were collected on filters made of FPP fabric, followed by radiometric determination on the DP-100 apparatus, with the SI-25 counter. The amount of aerosols was calculated by the known method. About 500 samples were collected.

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USSR

ARKHANGEL'SKAYA, I. G., et al, Gigiyena Truda i Professional'nyye Zabolyevaniya,
No 3, Mar 70, pp 41-43

Table 1

Concentration of long lived β -active aerosols in the atmosphere of the APS premises

	Concentration ($n \cdot 10^{-13}$ curie/l)	
	Energy conditions	Stopped reactor
Continuously used premises	2-7	1.2-4.2
Periodically used premises	4-5.2	1.2-2.3
Unused premises		1.2-15

The concentrations and isotope composition of aerosols varied. None of the premises tested showed aerosol concentrations exceeding the acceptable air limits for work premises during the test period.

Table 1 shows the content of long lived β -active aerosols in the air of production premises.

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USSR

ARKHANGEL'SKAYA, I. G., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 41-43

Analysis of the decomposition curves of aerosol samples showed that in 95-99% of all cases, they consisted of relatively short-lived isotopes with $T_{eff} = 20-25$ min. Only 1-5% of the activity corresponded to the fraction of the long-lived component (the filters were read after 24 hrs of storage).

The isotope composition of aerosols was determined radiochemically and by means of γ -spectrometry. It was determined that the relatively short-lived aerosols consist primarily of Rb88 and Cs137 (up to 70%). In addition, this short-lived fraction contains rare earth elements (up to 17%) and barium group elements (about 7%). Thus, the dominant input into the activity of the short-lived component is due to Rb88 -- a product of the breakdown of "fission" gas Kr88.

The long-lived fraction of aerosols consists mainly of elements of induced activity of the heat carriers such as: Fe⁵⁹, Zr⁹⁵, Zr⁹⁷ and Co⁶⁰ (V. M. Kozlov and co-authors).

The levels due to the activity of individual isotopes during normal utilization of the APS, with consideration for repairs, were calculated (N. G. Gusev) and

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ARKHANGEL'SKAYA, I. G., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 41-43

reported in units of maximum permissible load (MPL) per organ in question. According to data from the International Commission on Radiological Protection, the exposure period in all calculations was considered to be one hr. All reports on dose levels are this time period. Lungs were selected as the critical organ for dose calculation of relatively short-lived components.

The average annual concentration of short-lived aerosols reaches 10^{-11} curie/l, and the average annual concentration of the long-lived ones -- $5 \cdot 10^{-13}$ curie/l. Tables 2 and 3 show the concentrations and dose levels in critical organs due to the relatively short-lived and long-lived components of the aerosols, respectively. It follows from these data that the dose levels in critical organs were not high, amounting to hundredths of MPL. Due to the fact that personnel servicing the station use individual protective masks during work to safeguard the breathing organs, the actual levels should be even lower.

Thus the concentrations of aerosols and the doses of internal irradiation of service personnel were for all practical purposes considerably lower than the maximum permissible level during various work periods at the station.

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ARKHANGEL'SKAYA, I. G., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 41-43

Table 2

Concentration (curie/l) of individual short-lived aerosol components and their dose in critical organs.

Isotope	Concentration	Dose load (in units of maximum permissible load)	Critical organ
Rb88	$3.9 \cdot 10^{-12}$	$3.9 \cdot 10^{-3}$	Lungs
Rb89	$5 \cdot 10^{-15}$	$6.3 \cdot 10^{-8}$	Lungs
		$1.6 \cdot 10^{-4}$	Bones
Fe131	$1 \cdot 10^{-13}$	$3.4 \cdot 10^{-6}$	Lungs
		$1.1 \cdot 10^{-2}$	Thyroid gland
Cs138	$3.3 \cdot 10^{-12}$	$3.3 \cdot 10^{-3}$	Lungs
Ba141	$3 \cdot 10^{-13}$	$6.6 \cdot 10^{-5}$	Lungs
Ba142	$5.6 \cdot 10^{-13}$	$1.9 \cdot 10^{-4}$	Lungs
RE elements	$1.7 \cdot 10^{-12}$	$3.6 \cdot 10^{-5}$	Lungs

Note. Rubidium and caesium MPC is 10^{-9} curie/l; MPC of other elements is not available.

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ARKHANGEL'SKAYA, I. G., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 41-43

Table 3

Concentration (curie/l) of individual long-lived aerosol components and their accumulation in critical organs.

Isotope	Concnetration	MPC	Dose accumulation (in MPC units)	Critical organ
Cr ⁵¹	$1 \cdot 10^{-14}$	$2 \cdot 10^{-9}$	$5 \cdot 10^{-6}$	Lungs
Fe ⁵⁹	$7 \cdot 10^{-14}$	$3 \cdot 10^{-11}$	$2.4 \cdot 10^{-3}$	Spleen
Co ⁶⁰	$5 \cdot 10^{-15}$	$9 \cdot 10^{-12}$	$5.6 \cdot 10^{-4}$	Lungs
Sr ⁸⁹	$5 \cdot 10^{-15}$	$3 \cdot 10^{-11}$	$1.7 \cdot 10^{-4}$	Bones
Y ⁹¹	$1 \cdot 10^{-14}$	$8 \cdot 10^{-9}$	$1.3 \cdot 10^{-6}$	Lungs
Zr ⁹⁵	$1.1 \cdot 10^{-13}$	$1 \cdot 10^{-9}$	$1.1 \cdot 10^{-4}$	Lungs
Zr ⁹⁷	$5 \cdot 10^{-15}$	$9 \cdot 10^{-11}$	$5.6 \cdot 10^{-5}$	Lungs
Ru ¹⁰⁶	$5 \cdot 10^{-15}$	$6 \cdot 10^{-12}$	$8.4 \cdot 10^{-4}$	Lungs
Cs ¹³⁷	$1 \cdot 10^{-14}$	$1 \cdot 10^{-11}$	$1.0 \cdot 10^{-3}$	Lungs
La ¹⁴⁰	$5 \cdot 10^{-15}$	$1 \cdot 10^{-10}$	$5 \cdot 10^{-5}$	Gastro-intestinal tract
Ce ¹⁴⁴	$1 \cdot 10^{-14}$	$6 \cdot 10^{-12}$	$1.7 \cdot 10^{-3}$	Lungs

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ARKHANGEL'SKAYA, I. G., et al, Gigiyena Truda i Professional'nyye Zabolevaniya, No 3, 1970, pp 41-43

The levels of contamination of the atmosphere in production premises may be lowered substantially by improving the quality of cleaning of heat carriers from radioactive products, by improving the hermetic sealing of the units, so that the dose of internal irradiation for service personnel at APS may be brought to the minimum.

LITERATURE

GUSYEV, N. G., Maximum permissible levels of ionizing radiation. M., 1961.

GUSYEV, N. G., (Edit) et al, Dosimetric and radiometric methods. M., 1966.

USSR

UDC 621.791.75.04

VERBITSKIY, V. G., and LANDA, M. I., Candidates of Technical Sciences, and
TUKHMETOV, R. YU., Engineer Ufa Aviation Institute imeni S. Ordzhonikidze);
SHNAYDER, B. I., Candidate of Technical Sciences (Institute of Electric
Welding imeni Ye. O. Paton, Academy of Sciences Ukrainian SSR)

"Use of Ceramics in Microplasma Welding Torches"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 74, pp 70-71

Abstract: The requirements of microplasma welding torches are discussed from the viewpoint of using nozzles made of ceramics. Analysis of the physico-chemical, thermomechanical, and electrical properties of ceramic materials showed that materials of the following modifications are required for welding torches: volumetrically constant with a porous ceramic structure for making parts testing the sharp thermal shocks and action of high temperature; volumetrically constant with a high gas permeability for gas lenses, and dense ceramic materials providing laminar flow of the shielding gas for mechanically and electrically loaded parts. It is advantageous to use materials of the $Al_2O_3-ZrO_2$ system to produce ceramics of the described modifications.

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USSR

VERBITSKIY, V. G., et al., *Avtomaticheskaya Svarka*, No 2, Feb 74, pp 70-71
Materials made of MgO , HfO_2 and others also show promise for use in the
design of microplasma welding torches. Three figures, three bibliographic
references.

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USSR

UDC 621.791.008.1

VERBITSKIY, V. G.

"Republic Interfield Scientific-Technical Conference"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 70, p 76

Abstract: This article presents an account of the Second Republic Interfield Scientific-Technical Conference held in Ufa on 20-23 May, 1970. The Conference was organized by the Bashkir Oblast Directorate of the Scientific and Technical Society of the Machinery Industry, the Bashkir Center of Scientific - Technical Information, and the Ufa Aviation Institute. More than 200 delegates from industrial enterprises, construction organizations, scientific and research institutes, and higher educational institutions from Bashkinya, Moscow, Chelyabinsk, Voronezh, Khar'kov, Petrozavodsk, and elsewhere attended the conference. The conference was inaugurated by P. P. Mavlyutov, Dean of the Ufa Aviation Institute imeni S. Ordzhonikidze. Thirty-four reports and communications dealing with welding, metal depositing, and soldering were presented. Of particular interest was a report on the use of a radiation energy source for welding and soldering, presented by Doctor of Technical Sciences G. D. Nikiforov and Engi-

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VERBITSKIY, V. G., Avtomaticheskaya Svarka, No 9, Sep 70, p 76

neer M. I. Oparin of the Moscow Aviation Technological Institute. Results of investigations and the development of technology for automatic welding of titanium up to 12 mm thick in manufacturing intermediate products were analyzed by engineers Ye. A. Skvortsov, I. Ya. Zubarev and Yu. A. Urusov (Ufa).

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USSR

UDC 621.791.037

SHNAYDER, B. I., Institute of Electric Welding imeni Ye. O. Paton, SERGEYEV, Yu. Ye., VERBITSKIY, V. G., GETSONOK, A. L., and YAKOVLEV, G. Kh., Ufa Aviation Institute imeni S. Ordzhonikidze

"Controlling Automatic Tungsten Electrode Argon Arc Welding of Thin-Sheet Parts with Curvilinear Contours"

Kiev, Avtomaticheskaya Svarka, No 12, Dec 70, pp 15-18

Abstract: Welding of parts with curvilinear contours such as those used in the manufacture of piping and nozzles, is a process which can best be done automatically. The seams in this type of welding are curved, in the vertical plane, and the parameters controlled in the welding process are the length of the arc, the welding rate consisting of a horizontal and vertical component, the angle of inclination of the electrode to the profile, and the angle of inclination of the part profile along the seam line relative to the horizontal plane. If this last factor is not controlled, its effect on the quality of the seam must be compensated by correcting the welding rate or the current. The authors found also that in the development of an automatic control system of arc welding, the inertia of the arc must be 1/2

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SHNAYDER, B. I., et al., *Avtomaticheskaya Svarka*, No 12, Dec 70, pp 15-18
taken into account. Results obtained in the article were produced through
the automatic ACK-1 welding machine.

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USSR

UDC 061.3:621.791

VERBITSKIY, V. G.

"Second Republic Interbranch Scientific and Technical Conference on Welding"

Moscow, Svarochnoye Proizvodstvo, No 9, Sep 70, pp 61-62

Abstract: The Second Republic Interbranch Scientific and Technical Conference on "Advanced Methods of Welding in Industry and Construction" was held in Ufa May 20-23, 1970. The conference was sponsored by the Bashkir Oblast Administration of the Scientific and Technical Society of the Machinery Industry, the Bashkit Center of Scientific and Technical Information, and the Ufa Aviation Institute. The gathering was attended by more than 200 representatives of various organizations and educational institutions of Bashkiria, Moscow, Chelyabinsk, Voronezh, Khar'kov, Petrozavodsk, and other cities. Thirty-four were delivered and discussed. The conference was opened by R. R. Mavlyutov, Dean of the Ufa Aviation Institute. A report on the state of the art and prospects for the development of welding in Bashkiria was presented by V. G. Verbitskiy. Yu. Ye. Sergeyev discussed the selection of an efficient structure for an automatic system of

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VERBITSKIY, V. G., Svarochnoye Proizvodstvo, No 9, Sep 70, pp 61-62

controlling the process of the arc welding of intricate parts. G. D. Nikiforova and M. I. Oparina analyzed the application of radiant energy in welding and soldering. The effect of the pressure of a controlled atmosphere on the parameters of the arc and the depth of its fusion was reported by V. V. D'yachenko and A. N. Ol'shanskiy. A report on the fluctuation in the depth of penetration by electron beam welding was presented by F. K. Ryzhkov, A. V. Bashkatov, and V. S. Glotov. Nondestructive methods of controlling spot and roll welding joints were discussed by B. D. Orlov and V. G. Podlesnykh. A report by V. G. Verbitskiy, G. Kh. Yakovlev, R. D. Pilipchuk, and R. Yu. Tekhmetov dealt with the features of the fusion welding of aluminum alloys less than 1 mm thick. A. V. Bakiyev, R. S. Zaynullin, and A. N. Avrutskiy analyzed the strength and plastic characteristics of welds

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VERBITSKIY, V. G., Svarochnoye Proizvodstvo, no 9, Sep 70, pp 61-62

of high-alloy steels and bimetals under conditions of biaxial tension. A report on a newly developed technology of welding alitized pipes was delivered by N. P. Treyer. A thyristor interruptor for high-speed seam welding was discussed by Ye. I. Nacharov. The production technology of chemical machinery clad with a layer of monel to increase both the quality of welds and economic effectiveness was the subject of a report by F. Sh. Sharif'yanov. The topics discussed by other participants included the effect of pulse welding on the strength characteristics of welds; effect of the structure and gas content of sintered aluminum powder on its weldability; alloying of metal in carbon dioxide deposition of a powder metal strip; advanced methods of spray-coating metals; effect of ultrasonic vibrations on the quality of deposits of high-alloy wear and heat-resistant alloys; stability of a metal deposited by TSN-12 electrodes; use of gas-substitutes for acetylene in deposition and mechanization of hard-facing operations;

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VERBITSKIY, V. G., Svarochnoye Proizvodstvo, No 9, Sep 70,
pp 61-62

and new powder metal wire for wear-resistant deposition. At the
concluding session, M. D. Sidorova, scientific editor of the
periodical Svarochnoye Proizvodstvo ("Welding Practice") spoke
of the activities of the editorial board on highlighting the
problems related to welding in industry and construction.

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USSR

UDC: 621.791.89:669.15-194

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SHNAYDER, B.I., VERBITSKY, V.G., and VANGNITS, I.S.

"The Use of Microplasma Welding to Correct Defects in Stainless Steel Units"

Kiev, Avtomaticheskaya Svarka, No 5, May 1970, pp 71-72

Abstract: Defects (e.g., blowholes and pores) in stainless steel units are usually corrected by argon arc welding. However this method has several shortcomings, the most serious being the presence of a large warmup zone which leads to warping of the metal, solder fusion, and structural changes. Microwave welding does not have these disadvantages. A study was made of correcting defects in stainless steel by using microplasma welding. Equipment developed at the Institute of Electric Welding imeni Ye. O. Paton was used in the study. An A-1255 power supply device was used with a welding torch operating on 0.5-10 ampere DC current under continuous arc conditions. Argon was used as the plasma-forming gas; the shielding gas was a mixture of argon and hydrogen (96% Ar - 4% H₂). After welding the units were subjected to repeated airtightness tests under a dynamic pressure of 20 atmospheres. No leaks were detected in the welded sites. Metallographic investigations indicated that the fused metal was dense, and cracks, pores, and other defects were absent. The depth of fusion was up to 0.8 mm. No structural changes were detected at the fused metal boundary. The reverse side of the welded

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SHNAYDER, B.I., et al, Avtomaticheskaya Svarka, No 5, May 1970, pp 71-72

walls had an iridescent tarnish corresponding to a heating temperature of about 700°C. The state of brazed joints in the weld zone was satisfied, and solder fusion or oxidation was not detected. The welded surface does not require mechanical dressing.

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USSR

VERBITSKIY, V. YA.

UDC 681.3.001:518.5

"Examples of Use of Poisson's Addition Formula"

Tr. Uchebn. In-tov Svyazi. M-vo Svyazi SSSR (Works of Educational Communications Institutes. Ministry of Communications, USSR) No 49, 1970, pp 148-156 (from Referativnyy Zhurnal Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 3, 1971, Abstract No 3, B59 by V. Kh)

Translation: The application of the method of synthesis of trigonometric series using the Poisson addition formula is illustrated. Approximation formulas presenting the initial series in closed form are produced, and it is shown that the error of these formulas is rather small. 5 biblio. ref.s

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Numerical Analysis

USSR

VERBITSKIY, V. Ya.

UDC: 681.3.001:518.5

"Application of Poisson Addition Formulas for Approximate Synthesis of Trigonometric Series"

Tr. Uchebn. In-tov Svyazi. M-vo Svyazi SSSR [Works of Educational Communications Institutes. Ministry of Communications, USSR] No 49, 1970, pp 143-148 (translated from Referativnyy Zhurnal Avtomatika, Telemekhanika I Vychislitel'naya Tekhnika, No 3, 1971, Abstract No 3 B58 by V. Kh.)

Translation: It is shown that the Poisson addition formula known in mathematical physics can be used for synthesis of trigonometric series, significantly increasing the number of series synthesized. Formulas are derived, the application of which causes a given trigonometric series to be replaced by a series or functional structure converging, in many cases, more rapidly than the initial series. A procedure for synthesis of trigonometric series is described. A table of coefficients of certain trigonometric series is given, for which the method suggested is quite effective. One table; 4 biblio. refs.

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USSR

UDC 669.184.244.66
BLINOV, K. A., VERBITSKIY, YA. D., AFANAS'YEV, S. G., KVITKO,
M. P., and FILATOV, YU. V.
"Study of the Interaction of the Gas Stream With the Liquid Bath
on Cold Models"

Proizvodstvo Chernykh Metallov (Production of Ferrous Metals-
Collection of Works,) No 75, Metallurgiya Press, 1970, pp 89-93

Translation: Problems of the formation and removal of spray
from the throat of a converter and along its height are discussed.
Experiments were performed using a cold model of a 10 T conver-
ter. The liquid modeling the metal was ordinary water.

It was established that the nature of the change in spray transfer for all
types of heads studied was identical, although the rate of reduction of the
quantity of spray in the throat of the model was higher upon transition to
higher oxygen flow rates for a 13-nozzle tuyere than for other types. The
characteristics produced indicate that when the oxygen converter process is
intensified, tuyere designs should be used providing the maximum breakup of the
gas stream, in order to avoid splashing and loss of metal. 5 figures; 6 biblio.
refs.
1/1

USSR

VERBLYUDOVA, N. I.

UDC 615.917

"Study of the Distribution, Accumulation and Elimination of Polychloropinene from the Organism of Warm Blooded Animals"

V sb. Gigiyena primeneniya toksikol. pestitsidov i klinika otravl. (Hygiene of the Application and Toxicology of Pesticides and the Clinical Aspects of Poisoning -- collection of works), vyp. 9, Kiev, 1971, pp 114-122 (from RZh-Farmakologiya. Khimioterapevticheskiye sredstva. Toksikologiya, No 2, Feb 72, Abstract No 2.54.778)

Translation: Five minutes after a single intraperitoneal injection of polychloropinene (I) in the amount of 175 mg/kg ($1/2DL_{50}$) in rats when using the method of microthin-layer chromatography, I was detected in the heart, spleen, lungs, muscle and fatty tissue; somewhat later I was found in the liver, kidneys and brain. The maximum amount of I was found 30-60 minutes after injection: 17 mg/kg in the blood, 16.9 mg/kg in the lungs, 16 mg/kg in the heart, 16 mg/kg in the spleen, 15.7 mg/kg in the brain, 11.8 mg/kg in the liver, 11.3 mg/kg in the kidneys, and 8.1 mg/kg in the muscle tissue. In the fatty tissue the maximum amount of I was noted after 14 days. Thirty days after injection I was detected only in the fatty tissue (7.5 mg/kg). When studying the paths and kinetics of elimination, the maximum amount of I was discovered in the exhaled

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VERBLYUDOVA, N. I., Gigiyena primeneniya toksikol. pestitsidov i klinika otravl.,
vyp. 9, Kiev, 1971, pp 114-122

air (0.005% of the injected dose), urine (0.02%) and feces (0.1%) 12 hours after injection, in the skin (0.19%) 30 minutes after injection; insignificant amounts of I were detected in the exhaled air (0.002%) 24 hours after injection, in the urine (0.002%) and feces (0.012%) 48 hours after injection, and in the skin (0.005%) 7 days after injection. The total amount of I analyzed in the various organs, tissues, urine, feces, and so on was 35% of the injected dose. Obviously, the basic part of the I is in the organism tightly bound to the tissue components.

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USSR

UDC 632.95

VERBYUDOVA, H. I.

"Methods of Determining Polychloropinene and Polychlorocamphene in the Presence of DDT and Other Organochlorine Pesticides"

Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh. sredy (Works of the Second All-Union Conference on Investigation of Residues of Pesticides, and Prevention of Pesticide Contamination of Foodstuffs, Fodder and the External Environment), Tallinn, 1971, pp 148-150 (from RZh-Khimiya, No 11, Jun 72, Abstract No 11K405)

Translation: The sample to be analyzed is extracted with n-hexane, the extract is clarified with H_2SO_4 , washed with water, dried over H_2SO_4 , chromatographically analyzed on KSK or KSK-2 silica gel in the n-hexane - ethyl acetate system (5:1), developed with a solution of $AgNO_3$ and ammonia in acetone with subsequent exposure to ultraviolet light. Sensitivity of determination is 1-2 γ . When DDT is present in the specimen to be analyzed, the procedure includes additional identification by UV-spectroscopy (225 nm). A method of micro-thin-layer chromatography on KSK silica gel with grain size of 3-10 μ in the n-hexane - MeOH - ammonia system (10:4:0.3) is also proposed. The sensitivity of the method is 0.1-0.2 γ . Organochlorine pesticides are

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VERBLYUDOVA, N. I., Tr. 2-go Vses. soveshch. po issled. ostatkov pestitsidov i profilakt. zagryazneniya imi produktov pitaniya, kormov i vnesh. sredy, Tallinn, 1971, pp 148-150

determined by using a reaction with diphenylamine in the presence of $ZnCl_2$ in acetone with subsequent heating of the plate at $140-150^{\circ}C$.

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USSR

UDC: 632.95

VERBLYUDOVA, N. I. and KLISENKO, M. A.

"Identification of Certain Organochlorine Pesticides by Means of Thin-Layer Chromatography and Ultraviolet Spectroscopy"

V sb. Gigiyena primeneniya, toksol. pestitsidov i klinika otravl. (Hygiene of the Use and Toxicology of Pesticides and Clinical Symptoms of Poisoning--Collection of Works), No 7, Kiev, 1969, pp 546-552 (From RZh-Khimiya, No 23, 10 Dec 70, Abstract No 23 N728 by I. A. Revel'skiy)

Translation: It was demonstrated that 2,4,5-T, DDT, and polychloropinene can be detected by chromatography on layers of Al_2O_3 and silica gel by visual observation of stained spots and by successive elution of the spots and spectroscopic determination of the preparations in the ultraviolet region. The sensitivity of the thin-layer chromatographic method is $5 \mu g$ of the substance, that of ultraviolet spectroscopy $>80 \mu g$.

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USSR

UDC 614.31-07:615.285.7

VERBLYUDOVA, N. I., and KLISENKO, M. A., Laboratory of the Analytical Chemistry of Pesticides, All-Union Scientific Research Institute of Hygiene and Toxicology of Pesticides, Polymers, and Plastics, Kiev

"Determination of Polychloropinene in the Presence of DDT and Other Organochlorine Pesticides in Foodstuffs"

Moscow, Voprosy Pitaniya, No 5, 1970, pp 89-91

Abstract: Polychloropinene is prohibited in foodstuffs consumed in the USSR, but the available methods for detecting it are inadequate because of their low sensitivity or lack of specificity in the presence of DDT and other organochlorine pesticides. A method is proposed which is simple, requires no costly reagents or apparatus, and is quite sensitive and specific. It involves extracting polychloropinene from a food sample with n-hexane, purifying the extract, and then chromatographing it in an ultrathin layer of silica gel. In view of the specific reaction of polychloropinene with silica gel, a mixture of n-hexane, methyl alcohol, and ammonia (10:4:0.3) proved to be effective in separating it from DDT. Bluish-green spots appear when polychloropinene is present.

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USSR

UDC 621.15:541.66

DOLZHENKOV, I. Ye., KLIMENKO, G. P., VERBOLOZ, V. D., RUBAN, A. A., KOVALYUK, V. V., and PROKOPENKO, V. Ye.

"Effect of Tempering and Self-Tempering on the Mechanical Properties of Thermally Hardened Carbon Filaments from Low-Carbon Steel"

Metallurgicheskaya i Gornorudnaya Promyshlennost', No 2, 1971, pp 26-27

Abstract: Carbon filaments 75 x 75 x 8 mm from open-hearth steel were hardened by tempering and self-tempering (i.e. a last discontinuous cooling) using electro-contact heating. Completely hardened filaments were tempered in an electrical shaft furnace from 100 to 650°C at 50° intervals for periods of 0.5 to 1.5 hours and cooled after treatment in air. The results of stability and microstructure studies confirmed previous results and indicated no change in properties after hardening by tempering or self-tempering at the same temperature and times. Changing the length of the processing time from 0.5 to 1.5 hours did not appear to affect the mechanical properties. Thermally processed filaments have a lower cold brittleness temperature. Even at -60°C the impact strength of improved steel was at the level of 15-20 kg/cm². The most stable values of impact strength at test temperatures from +20 to -60°C were obtained after hardening and tempering at 400-500°C.

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USSR

UDC 8.74

VERBOVSKIY, A. M.

"Utilization of Selector Channels for Grouping Computers"

V sb. Konstruir. i vnedreniye novykh sredstv vychisl. tekhn. (Construction and Introduction of New Computer Engineering Media--collection of works), Kiev, 1971, pp 24-28 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V488)

Translation: A file transmission device for use between memories is described. The file transmission device is a nonstandard device for a multicomputer information computation complex and is designed for organizing the data file transmission between the ready-access memories of the Dnepr-21 and BESM-6 computers. Control information transmitted over the dispatcher channel is used for synchronizing the exchange. The coupling device used as the dispatcher channel is connected to the multiplexing channels of both computers. Any of the computers can act as the initiator computer, but the control word is formed only by the BESM-6 computer. The Dnepr-21 computer can organize the exchange with the external memory only via the BESM-6 executing certain functions of a dispatcher. The information exchange between the computers takes place via the seventh line of the BESM-6 and the selector channel of Dnepr-2. The exchange file in this case goes on the following path: the ready-access memory of the Dnepr-21 to the selector channel of the Dnepr-21 to the file transmission device to the selector channel of the BESM-6 to the ready-access memory of the BESM-6. The data unit is 1,024 cells of the BESM-6 computer. The exchange takes place without a check

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USSR

VERBOVSKIY, A. M., Konstruir. i vnedreniye novykh sredstv vychisl. tekhn., Kiev, 1971, pp 24-28

sum; the systems errors are detected on completion of the exchange either by a signal to the interrupt system (in the Dnepr-21) or by a special interrogation instruction (in the BESM-6). The basic functions of the file transmission device are as follows: a) format conversion; b) accumulation of exchange synchropulses; c) conversion of words into parallel-series form; d) monitoring the data transmission; e) conversion of the signal levels.

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USSR

UDC: 622.243.94

BELYAYEV, V. P., VERCHERBA, A. O., MARTYNOV, V. F., PROTSVETOV, Yu. G.,
SHCHENNIKOV, Ye. V., Moscow Geological Prospecting Institute imeni S.
Ordzhonikidze

"Some Results of Modeling of the Process of Thermomechanical Destruction
of Rocks, Using a Laser as the Heat Generator"

Moscow, IVUZ Geologiya i Razvedka, No 7, Jul 71, pp 125-126

Abstract: The authors discuss the feasibility of using lasers as the
heat source for combination thermomechanical destruction of rocks.
Research was done using a 30-watt continuous laser based on a mixture of
CO₂, N₂, and He. The rock specimen was chucked up in a lathe with a special
device for controlling tool pressure over a wide range. The laser beam
was focused ahead of the tool into a spot with a diameter equal to the
width of the tool. Spindle rotation was 18 rpm, and cutting was done
for 3 minutes. The effectiveness of laser heating was determined by com-
parison with rock destruction by cutting alone. The results show that
heating increases cutting effectiveness by a factor of 2.25-3.5. One table.

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UNCLASSIFIED

PROCESSING DATE--09OCT70

TITLE--INFLUENCE OF SOLUBLE NITROGEN COMPOUNDS ON THE PURIFICATION AND

SUGAR LEVEL IN MOLASSES -U-

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DECREASED TECH. EFFICIENCY OF SUGAR BEET FACTORIES IN 1964-8 AS COMPARED WITH 1956-7 IS DUE TO THE POOR TECH. QUALITY OF SUGAR BEETS WHICH CONTAIN 70-5, 30-70, AND 400-600PERCENT OF THE NORMAL LEVELS OF K, P, AND N, RESP.

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IVANNIKOVA, A. D., Candidate of Technical Sciences, FROLOV, V. V., Doctor of Technical Sciences, and VERCHENKO, V. R., Candidate of Technical Sciences

"Pore Formation Attributed to Decarbonization of Pool in Welding of Titanium Alloys"

Moscow, Svarochnoye Proizvodstvo, No 8, Aug 71, pp 59-61

Abstract: The authors undertook to determine the effect of individual gases and carbon on pore formation in the seams of titanium alloys by comparing variations in experimentally determined hydrogen, oxygen, and carbon concentrations of the pool metal with variations in the seam porosity as a result of the differentiated addition of these elements to the base metal or the arc zone. VT1 sheet titanium and the α -alloy OT4 were used for the experiments. The gas content of the metal was determined by spectral analysis, the carbon content by chemical analysis. The equilibrium heterogeneous system Ti-C-O was used to consider the pool decarbonization process. It was found that the porosity of welded seams increases on the burning-out of the carbon in the

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IVANNIKOVA, A. D., et al., Svarochnoye Proizvodstvo, No 8, Aug 71, pp 59-61

pool. A calculation of the possibility of pore formation showed that the carbon monoxide forming in the welding pool can lead to the appearance of reaction pores. The experimental determination of the gas composition of the pores confirmed that they contain carbon monoxide.

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Plant Pathology

USSR

VERDEREVSKIY, D., Professor, Doctor of Agricultural Sciences

"The Biological Immunity of Plants"

Moscow, Sel'skaya Zhizn', 29 Dec 71, p 2

Abstract: Use of pesticides for the control of insect pests and plant diseases has its shortcomings. These chemicals interfere with the balance of nature, killing useful insects including enemies of insect pests, and are harmful to the health of humans and farm animals. Furthermore, use of chemicals involves considerable expense. N. I. Vavilov stated that the application of chemicals on any extensive scale for the control of rust diseases or grain crops is not feasible from the practical standpoint because of the huge areas that have to be treated. On the other hand, grain crops can be protected from rust by using plant varieties that are resistant to this infection. Academician P. P. Luk'yanenko developed highly productive varieties of winter wheat (Bezostaya-1, Avrora, Kavkaz, etc) that have an increased resistance to rust diseases. Academician V. S. Pustovoyt and others have done similar work in developing sunflower varieties resistant to sunflower diseases. Notwithstanding these results, due attention is not being paid to the protection of crops by utilizing the natural immunity of plants. Resistance to diseases

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VERDEREVSKIY, D., Sel'skaya Zhizn', 29 Dec 71, p 2

and pests may be acquired spontaneously by natural selection. Some examples are the wheat *Triticum timopheevi* discovered by P. M. Zhukovskiy, which has a natural resistance to rusts and smuts, and the American varieties of grapes, which have developed spontaneously a resistance to phylloxera, mildew, and oidium after being exposed to them in turn. Under similar conditions, a resistance to mildew was developed by wild Amur grapes on the USSR Pacific Coast after this infection had penetrated there. Grapes from the Crimea, Central Asia, and the Northern Caucasus were infected with mildew on being grown from seeds. The individual plants that withstood the infection formed the starting point for the development of a mildew-resistant variety. By using mildew-resistant seedlings, interspecies hybridization was carried out to develop varieties that were also resistant to oidium, grey rot, leaf phylloxera, and root phylloxera. Sunflower was subjected to a similar process, which began with a mass selection of resistant plants in the 1860's, when this crop was affected severely by rust. The sunflower plants that are being grown at present in the USSR were developed on the basis of this rust-resistant variety; they have a combined resistance to rust, sunflower moths, and a number of races of broomrape. By interspecies hybridization, resistance

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to downy mildew is being added. Immune plant varieties may lose this immunity after cultivation for several years under field conditions either due to variation of the host plant or to variation of the parasite that damages it. However, the role of variations in the parasite is being exaggerated; the principal reason for the loss of resistance by host plants is lack of phytopathological control in seed growing. At present no phytopathological control of seed stock is being conducted. The procedures in present use are suitable only for growing seed of unstable varieties. In connection with the cultivation of seed of highly resistant varieties that are to be introduced, seed stock farms must expose the plants to infection under severe conditions and reject annually all plants that show instability with respect to resistance to infection. In connection with diseases such as brown rust of wheat, the pathogens of which vary faster than selection of resistant plants can match, dynamic interchange of cultivated varieties must be used based on a thorough study of the interchange of parasite races.

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USSR

UDC 632.95

VERDEREVSKIY, D. D., VOYTOVICH, K. A., KOBZOV, F. N., KHAKHAM, I. B., and
CHERNAYA, N. S.

"Copper Naphthenate Paste -- a Substitute for Bordeaux Mixture in Controlling
Apple Tree Scab"

Tr. Kishinev. S.-kh. in-ta (Works of Kishinev Agricultural Institute),
1971, 67, pp 32-34 (from RZh-Khimiya, No 1(II), Jan 72, Abstract No 1N431

Translation: In comparative tests, quadruple spraying of an apple orchard with
a 0.6% suspension of copper naphthenate paste was only slightly less effective
against scabs on the fruit and leaves than the same application of a 1%
solution of Bordeaux mixture. P. Popov.

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G. A. Sauridi, E. S. Veridish (engineers)

"A Method of Manufacturing Logic Elements"

Moscow, Priory i sistemy upravleniya, No 9, Sep 70, p 52

Translation: Semiconductor logic and functional elements are extensively used in industrial automation and telemechanics.

Independent development and manufacture of these elements by many organizations leads to unnecessary variety of design and manufacturing technology.

At present, the ET standard series of transistor elements and its modified design series designated "Logika" are in production. Both series include logic functional elements, time elements, and output amplifiers.

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